REMARKS

Applicants believe no new matter is added in this amendment. Entry of this amendment is respectfully requested.

Elections/restrictions

Office action, items 9-10. Claim 27 has been canceled. Applicants will amend inventorship in a manner consistent with remaining and/or allowed claims.

Amendments to the specification.

Applicants have added a new paragraph at page 1, line 7, indicating a joint research agreement in effect before the claimed invention was made, as allowed by Cooperative Research and Technology Act of 2004 (Federal Register, Volume 70, at 54259).

Office action, items 12 and 13. The title and abstract of the specification have been amended in response to the Examiner's objections.

Amendments to the claims.

In the amendment of March 31, 2003, claims 9-12, 15-24 and 26 were canceled. Claims 3-8 and 26 are canceled by the present amendment. After entry of the present amendment, Claims 1-2, 13-14, 25 and 28-29 will remain in this application.

Support for specific amendments may be found, for example:

for greater resistance to a fungal pathogen (claims 1, 13 and 25), on page 38, line 18 through page 39, line 9, and in Appendix A on the CD-ROM filed with the present application. Regarding the latter disclosure, Applicants have attached paper copies of the relevant pages entitled "Summary of Knockout G896, Family Z-LSDlike", which indicates that "[s]ince G896 transgenic plants have an altered response to the fungal pathogen Fusarium oxyporum [sic], the gene could be used to manipulate the defense response in order to generate pathogen-resistant plants";

for a wild-type plant of the same species as a control plant (claims 1, 13 and 25), on page 6, lines 12-13 and 26-33, and on page 7, lines 25-27, page 26, lines 12-14; and

for tissue-specific promoters (claim 2), on page 18, line 11; and

for stringent conditions comprising two wash steps for 45 to 60 minutes comprising wash conditions of 2x SSC, 1% SDS at 65° C (claims 1 and 13), on page 12, line 8, and on page 33, line 8. These stringency condition fall within the range specified in page 12, line 8 for the number of steps and time indicated on page 33, line 8.

Claim Objections.

Office action, item 14. Applicants have canceled claims 3-4, thus avoiding the objection. Applicants have responded to the objection to claim 14 by limiting the polynucleotide of claim 14 to SEQ ID NO: 15.

Rejections under 35 USC §112, second paragraph

Office action, item 16. The claim elements of wash times and conditions (two wash steps for 45 to 60 minutes and wash conditions of 2x SSC, 1% SDS at 65° C) have been added to the claims.

Claims 3-4 have been canceled.

Claim 1 has been amended by deleting elements (c) and (d), thus avoiding the part of the rejection directed to a narrow range falling within the scope of a broader range in the same claim.

Accordingly, Applicants respectfully request that the rejection under 35 USC §112, second paragraph, be withdrawn.

Rejections under 35 USC §112, first paragraph

Office action, item 17 (written description). Claim elements related to "conservatively substituted variants" have been deleted from the pending claims.

Regarding the presently claimed hybridization conditions, one of skill in the art would recognize that the claimed conditions are similar to or more stringent than the conditions identified as stringent in Example 9, 6x SSC at 65° C, of the Written Description Guidelines. As indicated by the Board of Patent Appeals and Interferences (for example in Appeal No. 2004-2201, Application No. 09/788,476), "[a] person of skill in the art would not expect substantial variation among species encompassed within the scope of the claims because the highly stringent hybridization conditions set forth in the claim yield structurally similar DNAs. Thus, a representative number of species is disclosed, since highly stringent hybridization conditions in combination with the coding function of DNA and the level of skill in the art are adequate to determine that applicant was in possession of the claimed invention". Therefore, the presently amended claims adequately describe the genus of transgenic plants (and method of making such plants) that comprise sequences that hybridize to nucleic acid sequences encoding SEQ ID NO: 110.

Office action, item 18 (enablement).

The Examiner has rejected the claims because the specification does not teach other polynucleotides comprising a conservative substituted variant of SEQ ID NO: 110. In response, Applicants have deleted this language from the claims.

The Examiner has also rejected the claims because the specification does not teach other polynucleotides that hybridize under stringent conditions. In response, Applicants note that hybridization

techniques using a known DNA as a probe under stringent conditions were conventional at the time of filing. Applicants identified hybridization conditions in their application that one skilled in the art would recognize as stringent (in fact, more stringent than the "stringent" conditions of 6x SSC at 65° C set forth in the USPTO's Written Description Guidelines). Applicants have thus taught a representative number of species of the invention, and it would be a matter of routine for one of average skill to identify and confirm the identity of species of the invention.

As to unique identifying features, Applicants have identified that unique identifying feature of the conserved domain of the protein encoded by SEQ ID NO: 15 (SEQ ID NO: 110), amino acid coordinates 18-39, in Figure 1. Conserved domains are well-known in the art as functional and structural features of proteins., For example, the NCBI Conserved Domain Database in its own description notes that conserved domains may be used as predictors of evolutionary relationship and function: "[p]roteins often contain several modules or domains, each with a distinct evolutionary origin and function" (currently found at http://www.ncbi.nlm.nih.gov/Structure/cdd/cdd.shtml). To identify conserved domains in a protein sequence, the conserved domain search service also uses a BLAST algorithm very similar to that described in the present specification. Applicants have also disclosed that the polypeptide encoded by SEQ ID NO: 15 is a Z-LSD-like transcription factor may produce the claimed modified trait since it "could be used to manipulate the defense response in order to generate pathogen-resistant plants" (on the CD-ROM filed with the application, and as shown in the attached "Summary of Knockout G896, Family Z-LSDlike".

As to the Examiner's statement that "Applicant does not teach altered or altering expression levels" of a polypeptide of the invention in a plant, Applicants note that the specification did predict that SEQ ID NO: 15, encoding SEQ ID NO: 110., "could be used to manipulate the defense response in order to generate pathogen-resistant plants" and stated that "[g]iven the disease and biochemical phenotypes of the knock-out plants, we would recommend overexpressing G896 and look for the opposite phenotypes in transgenic plants". The declaration of Dr. Reuber, attached, identifies four of eight lines of plants overexpressing G896 that are more tolerant to a fungal pathogen than wild-type control plants, thus confirming these statements by Applicants.

The data in Dr. Reuber's declaration also address the Examiner's use of the Larkin reference to support the unpredictability of transforming a plant to produce an opposite phenotype. In this particular case, knockout plants that were more susceptible to a fungal pathogen did suggest that an overexpressor of SEQ ID NO: 110 would be more resistant to at least one fungal pathogen when the sequence was overexpressed. Applicants believed this was true in this case because programmed cell death in plants occurs in a variety of contexts. One developmental use of programmed cell death in plants includes the formation of tracheary elements as part of the plants vascular system. Programmed cell death also plays an important role in a plant defense response during pathogen invasion. G896 (SEQ ID NO: 110) is a type I plant metacaspase whose

prodomain contains a C2C2 Zn finger module similar to the zinc finger motif found in lsd1 (lesions simulating disease 1), a negative regulator of pathogen induced hypersensitive cell death. A knockout mutation in G896 resulted in plants that were hypersensitive to cell death induced by the necrotrophic fungal pathogen *Fusarium oxysporum*. The enhanced susceptibility of G896 knockout mutants to *Fusarium oxysporum* infection suggested that G896 is a negative regulator of cell death pathway or a positive regulator of an anti-cell death pathway. A gene that regulates cell death in plants could be used to induce a pathogen protective hypersensitive response at will in plants without the potentially detrimental consequences of a constitutive systemic acquired resistance (SAR) response. In the case of infection by necrotrophic pathogens that rely on dead plant tissue as a source of nutrients, Applicants understood that prevention of cell death could confer tolerance to these diseases.

Thus, Applicants did teach a representative number of species of the invention, did enable one of skill in the art to practice the scope of the presently claimed invention, and did teach that the polypeptide encoded by SEQ ID NO: 115, SEQ ID NO: 110, can confer fungal pathogen resistance in plants.

Accordingly, Applicants respectfully request that the rejection under 35 USC §112, first paragraph, be withdrawn.

Rejection under 35 USC §102(e)

Office action, item 19. This rejection of the claims is avoided by the present amendment to the claims, as Thomashow et al do not disclose transgenic plants having greater resistance to a fungal pathogen than a wild-type plant of the same species.

Accordingly, Applicants respectfully request that the rejection under 35 USC §102, be withdrawn.

Double patenting

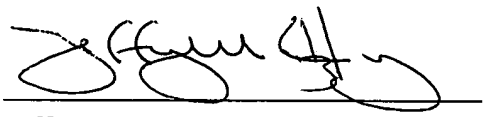
Office action, item 20. This rejection of claim 1 is avoided by the present amendment to the claims canceling claim 8.

Accordingly, Applicants respectfully request that this rejection be withdrawn.

CONCLUSION

Applicants believe that no additional fee is due with this communication. However, if the USPTO determines that a fee is due, the Commissioner is hereby authorized to charge Mendel Biotechnology, Inc. Deposit Account No. **50-1025.**

Respectfully submitted,
MENDEL BIOTECHNOLOGY, INC.



Date: November 4, 2005

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